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EXAMINER	
COOK, LISA V	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,560	KLEPP ET AL.	
	Examiner	Art Unit	
	Lisa V. Cook	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☒ Claim(s) *11,12 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/215,979.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Status

1. Currently claims 1-23 are pending and under consideration.

Priority

2. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78). The instant application contains the required first sentence referencing US Application Number 09/215,979 filed December 18, 1998, which claims priority to German Application Nos. 197 57 980.9 and 198 16 550.1. However, the specification should be updated to include US patent #6,703,196. Please add to the first line of the specification.

Oath/Declaration

3. A new oath or declaration is required because the Declaration includes non-initialed and dated corrections. See name and residence for inventor Fischer. The wording of an oath or declaration cannot be amended. If the wording is not correct or if all of the required affirmations have not been made or if it has not been properly subscribed to, a new oath or declaration is required. The new oath or declaration must properly identify the application of which it is to form a part, preferably by application number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and 602.02.

Information Disclosure Statement

4. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 or applicant on PTO-1449 has cited the references they have not been considered.

5. The information disclosure statement filed February 2, 2004 has been considered as to the merits before First Action.

Claim Objections

6. Claims 11 and 18 are objected to because of the following informalities: In claim 11 "off" should be "of". In claim 18, it appears that the recitation "the sample the sample" should be "the sample". Appropriate correction is required.

7. Claims 11 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically claims 11 and 12 are drawn to reagent storage, this is not given patentable weight in method claims involving the utility of the reagents.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 1 and 18 are vague and indefinite because the claims do not identify how the reagents will interact in order to measure an analyte of interest. As recited the metes and bounds of the claims cannot be determined. Although the sample is mixed with partner 2 of pair 1 and partner 2 of pair 2, it is not clear if they bind the analyte of interest. Will both partner 2 bind the analyte, will one bind, or neither? Further what is the interaction between pair 1 and pair 2? Without this understanding it is unclear as to how analyte of interest will be determined/measured. Appropriate clarification is required.

B. In claims 1 and 18 a negative limitation regarding the partner 2 components is needed. It is not clear that partner 2 for both sbp (specific binding pair) 1 and 2 are not present as part of the analytical device. The statement that the sample is mixed prior to application with partner 2 (claim 1) or the recitation that the substance is derived from and representing the analyte (claim 18), does not prevent the device form the inclusion of partner 2. It is suggested that applicant add "wherein partner 2 of specific binding pair 1 and partner 2 of specific binding pair 2 are not immobilized on the analytical element, in order to obviate this rejection.

C. The term "pre-selected antibody" in claims 9 and 10 is a relative term, which renders the claim indefinite. The term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. If applicant intends to recite that the antibody in known, that should be clearly set forth in the claims.

D. Claims 19 and 20 are vague and indefinite because it is not clear what Applicant means by the phrase "carries partner". Is it applicants in tent to mean the antibody or antigen is bound to the partner or merely moves the partner within the analytical element? Please clarify.

E. Claims 5 and 6 recite the limitation "direct label". Because the term is not defined in the specification, the recited claim is unclear and indefinite. What are the requirements for a direct label with respect to the instant invention? It is suggested that either applicant specifically recite "labels" not "direct label" or list suitable direct labels in the claim, in order to obviate this rejection.

9. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: The independent claims 1 and 18 are drawn to a method employing an analytical element for determining the presence of an analyte. However, the steps outlined in the claims do not identify the capture reagent that will allow for analyte determination. Two specific binding pairs are contacted with the sample, but neither specifically binds to the analyte of interest. Please add this essential component to the independent claims.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The method employing an analytical element as set forth in claims 1-22 (independent claims 1 and 18) has insufficient steps. These critical or essential steps are deemed necessary to the practice the invention, but are not included in the claim(s). Accordingly the claims are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). There is no claimed steps reciting the necessary capture reagents to detect the analyte of interest. Several binding partners are disclosed, but these pairs do not bind to the analyte. Because the element will be utilized to detect the presence of an analyte, the analyte immobilization with an appropriate detector/label is crucial to the intended use. Even in situations where the analyte is captured in a liquid mixture and then placed on the element, the element must house a mechanism to capture and detect the analyte complex. The element of the instant invention does not provide such a system. The specification exemplifies the instant analytical element containing the regents for detecting the analyte of interest (See examples 1, 2, and 3). Since, the invention is not disclosed to function in situations without the analyte capture reagents, the element as recited in claims 1-22 is not enabled. Please add the analyte capture (binding) zones/reagents/labels to the inventive analytical method.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

I. Claims 1-3, 5-16, 18-20 and 23 are rejected under 35 U.S.C. 102(a) as being anticipated by Pronovost et al. (WO 97/06439).

Pronovost et al. disclose an assay element that employs a method for assaying target substances in a fluid sample. The analytical element (test strip) comprises an application zone (sample-receiving zone), an optional labeling zone, and detection zone (a capture zone). See figure 1, abstract, and page 4, lines 18-30. In one embodiment the analyte is captured as a sandwich via two anti-analytes (i.e. partner 2 and labeled partner 3). Page 4, lines 31-34. In an improved format multiple specific binding partners are taught. These reagents can be mixed with the sample prior to adding to the element. See page 5 lines 16-25.

Binding in the detection zone is determined by the anti-analyte absorbed onto the zone or by specific binding pair interactions. Page 6, line 5. The zones are abutted to an absorbent, which enhances the flow of sample through the strip. Page 7, lines 25-33. Various configurations for the element are discussed. Page 10 lines 7-27 and page 15 lines 1-10. .

The specific binding partner utilized in the element (i.e. hapten, antibody, antigen, lectin, etc), Pronovost et al. disclose this limitation on page 13 lines 19-25.

With respect to the reagents being stored in separate containers, it is noted that these limitations are not given patentable weight in the method.

II. Claims 1-3, 5-16, 18-20 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Greenquist (U.S. Patent #4,806,311).

Greenquist discloses a multizone test device (assay element) for determining an analyte from a liquid test sample. The test device comprises multilayers including a reagent layer incorporated with an immobilized reagent (sample application zone with labeled partner) and a detection layer incorporated with an immobilized form of a binding substance for the labeled reagent (detection zone with another partner). The immobilized reagent and the labeled reagent comprise specific binding partners, which will bind to each other dependent on the presence of the analyte. See abstract. The layers are in fluid contact with one another (comprising materials enabling liquid transport). Multiple binding partner configurations are also described. Column 9, lines 11-55.

The specific binding partner utilized in the element (i.e. hapten, antibody, antigen, lectin, etc), Greenquist et al. disclose this limitation in column 7 lines 6-20.

With respect to the reagents being stored in separate containers, it is noted that these limitations are not given patentable weight in the method.

The method of Greenquist allows for accurate and sensitive detection of all the labeled reagent bound to an analyte. See column 6 lines 8-58.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

III. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) in view of Onishi et al. (EP 0 328 106 A2).

Please see previous discussions of Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311).

Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) differ from the instant invention in failing to teach the utility of dioxin in the analytical element device design.

However, Onishi et al. teach the utility of digoxin agents in such detection systems/elements. Digoxin is listed as a substance that reacts with the target in element analysis devices. See pages 4 and 5. Onishi et al. disclose an assay element that employs a method for assaying target substances in a fluid sample.

The method includes a target substance, a substance that specifically binds to the target substance coupled with a biologically active substance that does not bind to the target substance (specific binding partner 1), a label (β-D-galactosidase) that specifically binds to the target substance, a substance that binds to the biologically active substance (specific binding partner 2), and a substance that specifically binds β-D-galactosidase producing a detectable signal. The substance that binds the biologically active substance (specific binding partner 2) and substance that specifically binds β-D-galactosidase producing a detectable signal are attached to a carrier in a porous reaction layer of an assay element. (Abstract).

The element may further comprise a spreading layer, supplemental layers (i.e. blood separating layers), an adhesive layer, protection layer, and timing layer. These layers along with a coloring layer, conjugate- or labeled substance-containing layer may be formed individually or as a layer having two or more functions in combination. (Page 16, lines 13-20).

Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) in view of Onishi et al. are all analogous art because they are from the same field of endeavor, all three inventions teach immunoassay techniques involving analytical elements or test strips.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an antibody to the known labels (labeled antibodies) as taught in the references of Pronovost et al. (for example see page 1, lines 18-20 – page 2, lines 17-22) or Greenquist (for example see column 2, lines 53-65 – column 6-7, labeled reagents and detection systems) with the specific label diogoxin taught by Onishi et al. to perform analyte quantification in assay device/element systems, because such antibody conjugated to or specific for labels as taught by Onishi et al. are well known in the art. A person of ordinary skill in the art would have had a reasonable expectation of success utilizing antibodies to diogoxin, because Onishi et al. taught that antibodies directed to a target substance such as diogoxin are useful in test strip/elemental configurations for assay analysis. (page 4, lines 19-21, page 5, line 7)

Additionally, One of ordinary skill in the art would utilize various comparative-labeling reagents for the resulting data sets in order to evaluate the analyte of interest. These modifications with respect to the label employed, are routine optimizations that are almost always determined and used in immunoassay studies.

Unless the result obtained in the instant application is a significant and unexpected difference over the prior art, it would have been prima facie obvious for one of ordinary to employ diogoxin or any other known antibody detectable label reagent in the given parameters to determine the unknown as a means of optimizing the assays provided by the art.

One having ordinary skill in the art would have been motivated to do this because the utility of antibody-labels with element devices were useful in eliminating interfering factors (background and noise) from the test solution and have been shown effective in immunoassay protocols, allowing for high sensitivity, precision and reproducibility. Page 2 line 52 through page 3, line 1 (EP 0 328 106 A2).

IV. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) in view of Friedman et al. (EP 0 630 974 A2).

The teachings of Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) are set forth above. However, these references fail to teach the analytical assay elements in methods of nucleic acid amplification or nucleic acid hybridization.

However, Friedman et al. disclose the use of analytical elements to measure nucleic acid amplification and/or hybridization events. See abstract. The elements and methods are employed to measure nucleic acid amplification and/or hybridization by-products. As such they are valuable in detecting diseases and genetic feature in human or animal test specimens. See page 2 lines 1-10. The use of the method and elements was inexpensive, did not require the handling of difficult reagents, and did not employ complicated methodology. See page 2 lines 46-51.

It would have been prima facie obvious to one of ordinary skill in the art at the time of applicant's invention to take the analytical element detection assay as taught by Pronovost et al. (WO 97/06439) or Greenquist (U.S. Patent #4,806,311) and employ them in methods involving nucleic acid amplification and/or hybridization because Friedman et al. taught that the use of the method and elements was inexpensive, did not require the handling of difficult reagents, and did not employ complicated methodology. See page 2 lines 46-51. Further, nucleic acid amplification and/or hybridization are valuable in detecting diseases and genetic feature in human or animal test specimens. See page 2 lines 1-10.

13. For reasons aforementioned, no claims are allowed.

Remarks

14. Prior art made of record and not relied upon is considered pertinent to the applicant's disclosure:

A. Sizto et al. (U.S. Patent#4,791,056) teach assay methods involving a device with simultaneously calibration and analyte detection capabilities employing conjugated catalyst and specific binding pairs.

B. Kyle et al. (U.S. Patent#5,795,783) teach an analyte control system to test a plurality of different reactive chemicals on a test strip.

C. Yang et al. (U.S. Patent#5,354,692) teach assay methods involving a device with multiple liquid permeable materials.

15. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 1641 – Central Fax number is (571) 273-8300, which is able to receive transmissions 24 hours/day, 7 days/week. In the event Applicant would like to fax an unofficial communication, the Examiner should be contacted for the appropriate Right Fax number.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa V. Cook whose telephone number is (571) 272-0816. The examiner can normally be reached on Monday - Friday from 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le, can be reached on (571) 272-0823.

Any inquiry of a general nature or relating to the status of this application should be directed to Group TC 1600 whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see httpr//pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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